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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/539,463

07/26/2006

Gerhard Hartwich

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CROCKETT & CROCKETT, P.C.
26020 ACERO
SUITE 200
MISSION VIEJO, CA 92691

EXAMINER

SALZMAN, KOURTNEY R

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,463	Applicant(s) HARTWICH ET AL.	
	Examiner KOURTNEY R. SALZMAN	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>July 22, 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

1. This is the first action on the merits for application 10/539,463 filed July 26, 2006. This application is the national stage filing of PCT/DE2003/004259, which claims priority to DE 102 61 528.4, filed December 23, 2002.
2. Claims 1-26 have been cancelled in a preliminary amendment.
3. Claims 27-51 are currently pending and have been fully considered.

Priority

4. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on December 23, 2002. It is noted, however, that applicant has not filed a certified copy of the 102 61 528.4 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
8. Claims 27-31, 33-37 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over BHULLAR et al (US PG PUB 2002/0192115) in view of GEORGES et al (Georges, C., H. Sanchez, N. Semmar, C. Boulmer-Leborgne, C. Perrin, and D. Simon. "Laser Treatment for Corrosion Prevention of Electrical Contact Gold Coating." *Applied Surface Science* 186 (2002): 117-23., as supplied by the applicant).

Regarding claim 27, BHULLAR et al teaches a biosensor comprising a sensor substrate 12 with conductive paths 14, 16 and 18, as shown in figure 1A.

Paragraph 16 discloses the substrate or support of the instant application to be made of a polyimide or insulating material. Paragraph 17 discloses the use of any electrically conducting material including gold, nickel and copper.

BHULLAR et al fails to teach the layering of the materials for conduction.

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GEORGES et al teaches electrical wiring connections for conductivity comprising a copper layer (or metal core), with a nickel above (or diffusion layer) and a gold layer on top, to prevent corrosion, as stated in the abstract.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize the conductive paths of BHULLAR et al in the orientation of conductive materials of GEORGES et al because both are capable of utilizing the same materials for the same obvious purposed of electrical conduction.

Regarding claims 28 and 29, BHULLAR et al and GEORGES et al both teach the lowest layer of conduction to be copper, as taught in paragraph 17 of BHULLER et al and the abstract of GEORGES et al.

Regarding claim 30, GEORGES et al teaches the interlayer of nickel to be present between a metal core (copper) and the gold external layer in the abstract.

Regarding claim 31, the top of the right column on page 118 of GEORGES discloses the nickel layer to be between 2 and 5 microns.

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Regarding claim 33, the treatment of the top layer is described in GEORGES et al in the abstract and on page 120 in section 2.5 Laser Parameters, to require the melting of the gold in order to close the pores.

Regarding claim 34, the top of the right column on page 118 of GEORGES et al discloses the gold layer to have a thickness within the claimed region.

Regarding claim 35, the nickel layer of GEORGES et al is also described as a diffusion barrier. Since the diffusion barrier of GEORGES et al and the instant application share the same thickness, the barrier layer would perform the same intended use functionality described in the instant claim.

Regarding claims 36 and 37, BHULLER et al teaches a single-sided support plate composed of polyimide to be of use in paragraph 16. The rigidity of the biosensor is sufficient for biosensor use as described in paragraph 15.

Regarding claim 41, BHULLER et al and GEORGES et al fail to explicitly teach the width of the paths, however, the multilayer path of GEORGES et al is shown to function as plates, as stated in the abstract, and the gold paths of BHULLER et al are shown in figure 1A to be very thin comparative to the known size of the substrate, therefore, it would have been obvious to one of ordinary skill in the art

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to optimize the size of the path to minimize resistance yet maximize electronic transmission.

9. Claims 32, 39 and 40-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over BHULLAR et al (US PG PUB 2002/0192115) in view of GEORGES et al (Georges, C., H. Sanchez, N. Semmar, C. Boulmer-Leborgne, C. Perrin, and D. Simon. "Laser Treatment for Corrosion Prevention of Electrical Contact Gold Coating." *Applied Surface Science* 186 (2002): 117-23., as supplied by the applicant) as applied to claim 27 above, and further in view of LEE et al (US 6,180,523).

Regarding claim 32, the combination of BHULLER et al and GEORGES et al fail to teach the use of a lacquer layer applied to the layer.

LEE et al teaches electronic circuitry comprising a support plate 10, a metal core 38, barrier layer 46 and gold top contact 50. LEE et al teaches two insulating layers which function as insulating lacquers, as layers 20 and 42.

Regarding claims 39 and 40, BHULLER et al teaches a polyimide substrate as discussed above, but doesn't teach the use of a semiconductor plate as use as the support plate.

LEE et al teaches use of a silicon support plate for the electrical interconnection device is disclosed in the table of the bottom of table 7 and the lining of the

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support plate with an insulator (table 1) disclosed to possibly be SiNx in column 4, lines 58-59. At the time of the invention, it would have been obvious to substitute the semiconductor plate with insulating layer of LEE et al for the insulating plate of BHULLER et al because both are shown to effectively provide the base for electrical circuitry in the figures of BHULLER et al and LEE et al.

Regarding claims 42-46, BHULLER et al fails to teach the application of a secondary insulation layer but LEE et al teaches two insulators to be present as layers 20 and 42. LEE et al discloses the use of silicon oxide but it would have been obvious to utilize any insulating layer as the insulating material including parylene which is known in the art to be a water barrier and electrical insulator which cures with no solvent or catalysts. The thickness of the layer 42 shown in LEE et al is around 6 times thicker than the barrier layer 46 which is known to have a thickness of between 1800 and 2000 Angstroms. This would exhibit a thickness as required by the instant claim. Moreover, it would be obvious to optimize the thickness of the insulator to maximize the separation of contaminants outside the cell and the electrical components within. The insulator and gold combination shown figure 9 and 19B would allow for a test site to be evident.

Regarding claims 47-51, BHULLER et al fails to teach the via explicitly, however LEE et al teaches the via to comprise a metal core 28 of aluminum (table at the

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bottom of column 7), nickel via diffusion barrier 34 with the gold layer as 38 or 50, as shown in figure 9. The thickness of the nickel interlayer is between 1800 and 2000 Angstroms, as discussed in the table at the bottom on column 7. The thickness of the gold layer is disclosed in GEORGES et al, as discussed above.

10. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over BHULLAR et al (US PG PUB 2002/0192115) in view of GEORGES et al (Georges, C., H. Sanchez, N. Semmar, C. Boulmer-Leborgne, C. Perrin, and D. Simon. "Laser Treatment for Corrosion Prevention of Electrical Contact Gold Coating." *Applied Surface Science* 186 (2002): 117-23., as supplied by the applicant) as applied to claim 27 above, and further in view of HELLER et al (US PG PUB 2002/0137193).

The combination of BHULLAR et al and GEORGES et al teaches a polyimide material as the material of the support or multiple layers as disclosed in paragraph 16, but fails to teach one of the compounds expressly written in claim 38.

HELLER et al teaches an electrochemical tester comprising a working electrode disposed on a support or substrate made of epoxide woven glass fibers or polyimide in paragraph 25.

At the time of the invention, it would have been obvious to substitute the epoxide material of HELLER et al for the polyimide material of BHULLAR et al because

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they are acknowledged as equivalents in the art in HELLER et al as they both provide an insulating substrate.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KOURTNEY R. SALZMAN whose telephone number is (571)270-5117. The examiner can normally be reached on Monday to Thursday 6:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

krs
9/24/2009